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XXX. *Astronomical Observations made in the Austrian Netherlands in the Years 1773, 1774, and 1775. By Nathaniel Pigott, Esq. F. R. S. Foreign Member of the Academies of Bruffels and Caen, and Correspondent of the Royal Academy of Sciences at Paris.*

TO THE REV. DR. MASKELYNE.

REV. SIR,

Read May 7, 1778. **T**HE inclosed observations are a sequel to those I communicated to you in 1775, and which are printed in the LXVIth vol. of Phil. Transf. for the year 1776.

Louvain being a very considerable and the only university in the Austrian Netherlands, and upon that account a town of very great note, I was particularly desirous of settling its longitude and latitude with all the accuracy my situation and time would admit of; and the more so, that I believe myself to be the first person who ever made any astronomical observations in that place,  
and

and the first, of course, who has determined its position with any degree of certainty: there is, however, reason to think, that the government there will, in a short time, provide an observatory, and supply the same with proper instruments; the first use of which will, no doubt, be to verify the inclosed observations. I spared no pains to render their results as accurate as possible. With this view I collected, by the help of my friends, all the observations of Jupiter's satellites I could, corresponding to each of ours; convinced by a mature consideration of this matter, that the most effectual method of obviating the unavoidable errors which arise from the different goodness and power of instruments from the different conformation of eyes, different states of the atmosphere and other circumstances, is to compare each observation to as great a number corresponding as possible, made in different places by known observers, whose longitudes from a given meridian are well determined, and then taking a mean arising from each such comparison. The amazing differences which not unfrequently are found in observations of this kind, even among astronomers of high note, confirm me still more in this opinion; and I own, I should prefer, in order to settle the longitude of any place by Jupiter's satellites, three or four immersions and as many emersions, made in favourable circumstances,

and

and compared with a great number of corresponding ones, made in different places, to a far greater number, which could but be compared with those of one or two astronomers only. If this consideration be of the weight it appears to me, it has not been sufficiently attended to, and I mention it as it may be of use, particularly to young astronomers.

The meridian zenith distances of the Sun and stars were taken with a quadrant one foot and a half radius made by BIRD, exactly and very steadily fixed in the plane of the meridian. The declinations of the fixed stars, with the equations for aberration and nutation, were taken from the *Connoissance des Temps*; the Sun's declination from the Nautical Almanac; its parallax and refractions, with the corrections for the barometer and thermometer, were computed from MAYER's tables published by the Board of Longitude. It may not be improper to add, that, when I observed both the upper and lower limbs of the Sun upon the meridian, I made the horizontal wire of the quadrant merely a tangent to the Sun's limb; for which reason its diameter will come out by such observations considerably greater than it really was.

For the observations of Jupiter's satellites we used a reflector two feet and a half focal length, a telescope by

SHORT,

SHORT, 18 inches focus, and sometimes an achromatic treble-object glass of the same length, and not much inferior to it, made by Mr. RAMSDEN; the times were got by a quadrant and a grid-iron pendulum.

It is necessary to mention the difference of meridians between Paris and the places where the observations were made to which we compared our own; the more so, as some are not generally known, and others differ a small matter, from what is commonly supposed and printed in the *Connoissance des Temps*.

M. MESSIER, in communicating a considerable number of observations, informed me in a letter of the longitudes of the following places:

|   |   |    | h  | ' | "  |
|---|---|----|----|---|----|
| Corbeil East of R. Observatory at Paris,                                    | — | —  | 0  | 0 | 38 |
| Nolon, Mem. of Acad. of Sciences, 1764,                                     | — |    | 0  | 3 | 45 |
| Perinaldo, by nine corresponding observations of $\eta$ 's first satellite, | 0 | 21 | 33 |   |    |

By a letter from Mr. MALLET,

|         |   |   |   |   |         |
|---------|---|---|---|---|---------|
| Geneva, | — | — | — | — | 0 14 40 |
|---------|---|---|---|---|---------|

And by a letter on this occasion from M. BERNOULLI,

|                       |   |   |   |   |         |
|-----------------------|---|---|---|---|---------|
| Berlin, East,         | — | — | — | — | 0 44 10 |
| Milan, East of ditto, | — | — | — | — | 0 27 24 |
| Peterburg,            | — | — | — | — | 1 52 0  |

By the Rev. Mr. HORNSBY's letter,

|  |   |    |    |
|--|---|----|----|
| Oxford, West of Greenwich, 4' 59"; hence of Paris, | 0 | 14 | 15 |
|--|---|----|----|

By Mr. DALBY's letter,

|   |   |   |   |    |
|---|---|---|---|----|
| Muswel-hill, 30" West of Greenwich, and of Paris, | — | 0 | 9 | 46 |
|---|---|---|---|----|

The

The longitudes of the other obfervatories are affumed, as fet down in the *Connoiffance des Temps*, 1777, as being well fettled.

Twenty feconds were added to, or fubtracted from, the obfervations of the fatellites made at Greenwich, with the fix-feet reflector, on account of the great and fuperior power of that inftrument.

Although Jupiter's fatellites obferved at Bruffels be emerfions only, nevertheless, as they agree with what the aftronomers of the Academy of Sciences at Paris have done, as appears by the *Connoiffance des Temps*, the refult is well eftablifhed.

Being defirous of affording every means of examining and forming a right judgement of thefe obfervations, I could not avoid faying thus much concerning them. It now remains for me to return you my thanks for the obliging communication of your obfervations.

I am, &c.

NATH. PIGOTT.

Latitude of the *Refuge de Vrowperg, Rue des Domini-*  
*quaines, at Louvain.*

| 1774                   |     |   |   | • | '  | "                 |
|------------------------|-----|---|---|---|----|-------------------|
| July                   | 8.  | By the Sun's lower limb                   | — | — | 50 | 52 54,2           |
|                        | 9.  | By the Sun's upper limb,                  | — | — | 50 | 53 5,5            |
|                        | 11. | By $\zeta$ Ophiuci,                       | — | — | 50 | 53 6,8            |
|                        | 11. | By $\alpha$ Herculis,                     | — | — | 50 | 52 53,8           |
|                        | 11. | By $\alpha$ Ophiuci,                      | — | — | 50 | 52 54,9           |
|                        | 12. | By both limbs of the Sun observed,        | — | — | 50 | 52 51,5           |
|                        | 14. | By the Sun's lower limb,                  | — | — | 50 | 53 9,3            |
|                        | 14. | By $\alpha$ Herculis,                     | — | — | 50 | 52 54,1           |
|                        | 15. | By the Sun's lower limb                   | — | — | 50 | 53 8,1            |
|                        | 15. | By $\alpha$ Ophiuci,                      | — | — | 50 | 52 58,1           |
|                        | 16. | By $\zeta$ Ophiuci                        | — | — | 50 | 53 4,2            |
|                        | 16. | By $\alpha$ Herculis,                     | — | — | 50 | 52 55,7           |
|                        | 16. | By $\alpha$ Ophiuci,                      | — | — | 50 | 53 3,2            |
|                        | 18. | By $\alpha$ Ophiuci,                      | — | — | 50 | 52 57,0           |
|                        | 19. | By observations of both limbs of the Sun, | — | — | 50 | 53 7,9            |
|                        | 20. | By $\alpha$ Herculis                      | — | — | 50 | 52 55,3           |
|                        | 22. | By the Sun's upper limb,                  | — | — | 50 | 53 6,7            |
|                        | 22. | By $\zeta$ Ophiuci,                       | — | — | 50 | 53 5,5            |
|                        | 22. | By $\alpha$ Herculis,                     | — | — | 50 | 52 55,8           |
|                        | 23. | By $\alpha$ Herculis,                     | — | — | 50 | 52 55,5           |
|                        | 24. | By the Sun's lower limb,                  | — | — | 50 | 53 0,2            |
| Sept.                  | 30. | By both limbs of the Sun observed,        | — | — | 50 | 52 51,1           |
| 1775                   |     |   |   |   |    |                   |
| Aug.                   | 21. | By $\beta$ Cygni,                         | — | — | 50 | 52 51,1           |
| The mean of the above, |     |   |   | — | —  | <u>50 52 59,4</u> |

Having

Having on the 21<sup>st</sup>, 23<sup>d</sup>, 24<sup>th</sup>, 25<sup>th</sup> of April 1775, observed the zenith distances of  $\epsilon$  and  $\zeta$  urfæ majoris with the face of the quadrant to the East and West, in order to determine the error of the line of collimation, which I found to be  $25,2''$ , to be subtracted from the observed zenith distances, I computed the latitude likewise from the same stars, and can depend the more upon the result from them, as, being so near the zenith, they were little affected by refraction, and not at all by the error of the line of collimation, because observed both on the quadrantal arc and arc of excess.

|  |   |             |
|--|---|-------------|
| By $\epsilon$ urfæ majoris the latitude was found,       | — | 50° 53' 11" |
| By $\zeta$ urfæ majoris the latitude was,                | — | 50 53 9½    |
| By a mean of the Sun and stars as above,                 | — | 50 52 59,4  |
| Now, if a mean of the whole be taken, the latitude North |   | } 50 53 3   |
| of my observatory at Louvain will be                     |   |             |



Longitude of the *Refuge de Vrowperg, Rue des Domini-  
quaines*, at Louvain, deduced from observations of  
Jupiter's satellites.

Corresponding altitudes of Sun and stars.

|            |  | h  | '  | "      |
|------------|--|----|----|--------|
| 1774, Aug. | 15. Clock at noon, by fix sets of the Sun,       | 11 | 39 | 10,5   |
|            | 16. Clock at noon, by seven ditto, —             | 11 | 38 | 28,5   |
|            | 22. Clock at noon, by eight ditto, —             | 11 | 34 | 45—    |
|            | 23. Clock at noon, by two ditto, —               | 11 | 34 | 4+     |
|            | 24. Clock at noon, by six ditto, —               | 11 | 33 | 23+    |
|            | 25. Clock at noon, by seven ditto, —             | 11 | 32 | 24,5   |
|            | 29. $\alpha$ Aquilæ on meridian by the clock, —  | 8  | 35 | 42+    |
|            | 30. Clock at noon, by four sets of the Sun,      | 11 | 29 | 22—    |
|            | 31. Clock at noon, by three ditto, —             | 11 | 28 | 40+    |
| 1774, July | 24. Clock at noon, by four ditto, —              | 0  | 2  | 9+     |
|            | 29. Clock at noon, by two ditto, —               | 0  | 3  | 28—    |
| Aug.       | 21. Clock at noon, by four ditto, —              | 11 | 59 | 51     |
|            | 27. Clock at noon, by three ditto, —             | 11 | 59 | 36     |
| Sept.      | 2. Clock at noon, by four ditto, —               | 11 | 58 | 59+    |
| Oct.       | 5. Clock at noon, by five ditto, —               | 11 | 47 | 56+    |
|            | 6. Clock at noon, by three ditto, —              | 11 | 47 | 42+    |
|            | 14. Clock at noon, by three ditto, —             | 11 | 46 | 15     |
|            | $\alpha$ Aquilæ crossed a vertical by the clock, | 6  | 27 | 24     |
|            | 20. $\alpha$ Aquilæ crossed the same vertical,   | 6  | 4  | 49     |
|            | 21. Clock at noon, by three sets of the Sun,     | 11 | 45 | 58,5   |
|            | 22. Clock at noon, by three ditto, —             | 11 | 45 | 58—    |
| 1775, Feb. | 10. Clock at noon, by five ditto, —              | 11 | 59 | 47+    |
|            | 16. Clock at noon, by five ditto, —              | 11 | 59 | 54+    |
|            | 18. Clock at noon, by five ditto, —              | 11 | 59 | 50+    |
|            | 22. Clock at noon, by ten ditto, —               | 11 | 59 | 45+    |
|            | 28. Clock at noon, by four ditto, —              | 11 | 58 | 58,5 + |

The altitudes are corrected by the equation for declination.

For

## For the Longitude of Louvain.

1773, August 15, immersion of  $\mu$ 's first fatellite.

At 11h 28' 31" by the clock, self.

11 28 54 ditto, my son,

|   |   |   |   |   | Apparent times. |    |    |
|---|---|---|---|---|-----------------|----|----|
|   |   |   |   |   | h               | '  | "  |
| At Paris, M. MESSIER, $3\frac{1}{2}$ feet achrom. good, | — |   |   |   | 11              | 41 | 5  |
| At Geneva, M. MALLET, 10 feet achrom. fine sky,         | — |   |   |   | 11              | 55 | 58 |
| At Tyrnaw, F. WEISS,                                    | — | — | — | — | 12              | 41 | 23 |
| At Petersburg,  | — | — | — | — | 13              | 32 | 58 |
| At Louvain,   | — | — | — | — | 11              | 50 | 5  |

On a mean, Louvain East of Paris  $9^{\circ} 7'' +$ .August 22, immersion of  $\mu$ 's first fatellite.

At 13h 18' 52" by the clock, hazy, self.

13 19 24 ditto, by my son.

|  |   |   |   |   |    |    |    |
|--|---|---|---|---|----|----|----|
| At Corbeil, M. MESSIER, 32 inches reflector, fine, | — |   |   |   | 13 | 37 | 25 |
| At Petersburg,                                     | — | — | — | — | 15 | 28 | 20 |
| At Grietswalde,                                    | — | — | — | — | 14 | 20 | 44 |
| At Greenwich, six feet reflector,                  | — | — | — | — | 13 | 26 | 14 |
| At Louvain,  | — | — | — | — | 13 | 45 | 3  |

On a mean, Louvain East of Paris  $9^{\circ} 4''\frac{1}{2}$ .

## For the Longitude of Louvain.

1773, August 24, immersion of  $\mu$ 's second fatellite.

At 9h 56' 27" by the clock, self, good observation.

9 56 43 ditto, by my son.

|   |   |   |   | Apparent times. |    |    |
|---|---|---|---|-----------------|----|----|
|   |   |   |   | h               | '  | "  |
| At Corbeil, M. MESSIER, reflector as above, doubtful, | — |   |   | 10              | 14 | 52 |
| At Perinaldo, M. MARALDI, 3 feet achrom. fine         | — |   |   | 10              | 35 | 31 |
| At Geneva, M. MALLET, 10 feet achrom.                 | — | — |   | 10              | 29 | 14 |
| At Stockholin, M. WARGENTIN, 10 feet achrom. good     | — |   |   | 11              | 17 | 22 |
| At Louvain,   | — | — | — | 10              | 23 | 45 |

On a mean, Louvain East of Paris 9' 25'' $\frac{1}{2}$ .August 29, immersion of  $\mu$ 's first fatellite.

At 15h 10' 40" by the clock, self.

15 11 0 ditto, by my son, good.

|   |   |   |   |    |    |    |
|---|---|---|---|----|----|----|
| At Paris, M. MESSIER, achrom. as above, good,     | — |   |   | 15 | 32 | 41 |
| At Geneva, M. MALLET, achrom. as above, fine,     | — |   |   | 15 | 47 | 40 |
| At Perinaldo, M. MARALDI, achrom. as above, fine, | — |   |   | 15 | 53 | 49 |
| At Musfel-hill Mr. DALBY,                         | — | — |   | 15 | 22 | 34 |
| At Louvain,                                       | — | — | — | 15 | 41 | 25 |

On a mean, Louvain East of Paris 8' 51''.

For

## For the Longitude of Louvain.

1773, August 31, immersion of  $\mu$ 's first satellite.

At 9h 39' 1" by the clock, self, good, Moon-light.

9 38 50 ditto, my son.

|   |   |   |   | Apparent times. |    |    |
|---|---|---|---|-----------------|----|----|
|   |   |   |   | h               | '  | "  |
| At Nolon, Cardinal DE LUYNES, achrom. 60 times,             | — | — | — | 10              | 4  | 45 |
| At Tyrnaw, F. WEISS,  | — | — | — | 10              | 2  | 7  |
| At Perinaldo, M. MARALDI, achrom. as before,                | — | — | — | 11              | 22 | 16 |
| At Oxford, Mr. HORNSBY, achrom. $3\frac{1}{2}$ feet, clear, | — | — | — | 9               | 47 | 36 |
| At Greenwich, 6 feet reflector,                             | — | — | — | 9               | 51 | 57 |
| At Louvain,   | — | — | — | 10              | 10 | 39 |

On a mean, Louvain East of Paris 9' 31", 2

August 31, immersion of  $\mu$ 's second satellite.

At 12h 30' 49" by the clock, self, hazy and Moon-light.

|  |   |   |   |    |    |    |
|--|---|---|---|----|----|----|
| At Perinaldo, M. MARALDI, achrom. doubtful         | — | — | — | 13 | 14 | 32 |
| At Upsal,  | — | — | — | 13 | 55 | 20 |
| At Geneva, M. MALLET, achrom. as before, thin fog, | — | — | — | 13 | 8  | 51 |
| At Greenwich, six feet reflector,                  | — | — | — | 12 | 45 | 1  |
| At Louvain,  | — | — | — | 13 | 2  | 31 |

On a mean, Louvain East of Paris 8' 42".

For

## For the Longitude of Louvain.

1774, July 24, immersion of  $\mu$ 's second satellite.

At 13h 5' 0" by the clock, self, doubtful.

13 4 30 by ditto, my fon.

|   |   |   |   | Apparent times. |    |    |
|---|---|---|---|-----------------|----|----|
|   |   |   |   | h               | '  | "  |
| At Paris, M. MESSIER, achrom. as before, a little doubtful, |   |   |   | 12              | 53 | 25 |
| At Geneva, M. TREMBLAY, 10 feet achrom. fine,               | — |   |   | 13              | 7  | 55 |
| At Tyrnaw,  | — | — | — | 13              | 54 | 21 |
| At Greenwich, six feet reflector,                           | — | — | — | 12              | 43 | 49 |
| At Louvain,   | — | — | — | 13              | 2  | 42 |

On a mean, Louvain East of Paris  $9' 29'' +$ .July 26, immersion of  $\mu$ 's first satellite.

At 15h 21' 7" by the clock, self, good.

15 21 9 ditto, by my fon.

|  |   |   |   |    |    |    |
|--|---|---|---|----|----|----|
| At Geneva, M. MALLET, achrom. as before, fine, | — |   |   | 15 | 24 | 0  |
| At Milan, telescope magnifying 200 times,      | — | — |   | 15 | 36 | 31 |
| At Louvain,                                    | — | — | — | 15 | 18 | 15 |

On a mean, Louvain East of Paris  $9' 1''\frac{1}{2}$ .

For

## For the Longitude of Louvain.

1774, August 25, immersion of  $\mu$ 's second satellite.

At 12h 51' 36" by the clock, hazy, my son.

|   | Apparent times. |    |    |
|---|-----------------|----|----|
|   | h               | '  | "  |
| At Perinaldo, M. MARALDI, achrom. as before, good | 13              | 3  | 59 |
| At Paris, M. MESSIER, — — —                       | 12              | 42 | 40 |
| At Geneva, M. MALLET, fine weather, — —           | 12              | 57 | 45 |
| At Stockholm, — — — —                             | 13              | 46 | 11 |
| At Louvain, — — — —                               | 12              | 51 | 55 |

On a mean, Louvain East of Paris 9' 2".

August 27, immersion of  $\mu$ 's first satellite.

At 11h 54' 45" by the clock, my son, good.

|  |    |    |    |
|--|----|----|----|
| At Upsal, — — — —                      | 12 | 46 | 32 |
| At Milan, telescope as before, — — — — | 12 | 13 | 7  |
| At Louvain, — — — —                    | 11 | 55 | 12 |

On a mean, Louvain East of Paris 9' 39", 5.

September 1, immersion of  $\mu$ 's second satellite.

At 15h 30' 56" by the clock, my son, good.

|   |    |    |    |
|---|----|----|----|
| At Geneva, M. MALLET, achrom. as before, fine — | 15 | 37 | 27 |
| At Tyrnaw, — — — —                              | 16 | 23 | 5  |
| At Louvain, — — — —                             | 15 | 31 | 55 |

On a mean, Louvain East of Paris 9' 26" $\frac{1}{2}$ .

## For the Longitude of Louvain.

1774, October 1, immersion of  $\gamma$ 's first satellite.

At 10h 21' 46" by the clock, my son, hazy.

|   |   |   |   |   | Apparent times. |
|---|---|---|---|---|-----------------|
|   |   |   |   |   | h ' "           |
| At Greenwich, six feet reflector,   | — | — | — | — | 10 15 5         |
| At Paris, M. MESSIER, reflector $2\frac{1}{2}$ feet, excellent,           | — | — | — | — | 10 24 45        |
| At Milan, telescope as before,  | — | — | — | — | 10 51 43        |
| At Geneva, M. MALLET, achrom. 10 feet, fine,                              | — | — | — | — | 10 39 19        |
| At Oxford, Mr. HORNSBY, $3\frac{1}{2}$ feet achrom. magnifying 100 times, | — | — | — | — | 10 10 19        |
| At Marseilles, telescope magnifying 100 times,                            | — | — | — | — | 10 36 22        |
| At Tyrnaw,  | — | — | — | — | 11 25 9         |
| At Stockholm,   | — | — | — | — | 11 26 59        |
| At Petersburg,  | — | — | — | — | 12 16 5         |
| At Louvain,   | — | — | — | — | 10 33 56        |

On a mean, Louvain East of Paris 9' 36"

October 14, immersion of  $\gamma$ 's second satellite.

At 7h 16' 7" by the clock, my son, good.

|   |   |   |   |   |         |
|---|---|---|---|---|---------|
| At Greenwich, six feet reflector,                       | — | — | — | — | 7 11 23 |
| At Paris, M. MESSIER, $3\frac{1}{2}$ feet achrom. good, | — | — | — | — | 7 20 42 |
| At Tyrnaw,  | — | — | — | — | 8 21 13 |
| At Upsal,   | — | — | — | — | 8 21 58 |
| At Stockholm,   | — | — | — | — | 8 24 4  |
| At Louvain,   | — | — | — | — | 7 29 53 |

On a mean, Louvain East of Paris 9' 13".

For

## For the Longitude of Louvain.

1774, October 21, immersion of  $\mu$ 's first fatellite,

At 8h 39' 27" by the clock, my son, Moon-light.

|   |   |   |   | Apparent times. |    |    |
|---|---|---|---|-----------------|----|----|
|   |   |   |   | h               | '  | "  |
| At Greenwich, fix feet reflector,                             | — | — |   | 8               | 35 | 0  |
| At Paris, M. MESSIER, achrom. as above, good,                 |   | — |   | 8               | 44 | 47 |
| At Milan,   | — | — | — | 9               | 11 | 41 |
| At Geneva, M. MALLET, achrom. as above,                       |   | — |   | 8               | 59 | 20 |
| At Oxford, Mr. HORNSBY, $3\frac{1}{2}$ feet achrom. thin fog, |   |   | — | 8               | 30 | 26 |
| At Louvain,   | — | — | — | 8               | 53 | 29 |

On a mean, Louvain East of Paris, 9" 1'.

October 21, immersion of  $\mu$ 's second fatellite.At 9h 55' 15" by the clock, my son,  $\nu$  near  $\mu$ .

|   |   |   |   |    |    |    |
|---|---|---|---|----|----|----|
| At Greenwich, fix feet reflector,                             | — | — |   | 9  | 51 | 1  |
| At Paris, M. MESSIER, achrom. $3\frac{1}{2}$ feet, excellent, |   | — |   | 10 | 0  | 27 |
| At Geneva, M. TREMBLAY, Moon-shine,                           | — | — |   | 10 | 14 | 43 |
| At Milan, telescope as before,                                | — | — |   | 10 | 27 | 12 |
| At Louvain,   | — | — | — | 10 | 9  | 17 |

On a mean, Louvain East of Paris 9' 13".



For the Longitude of Louvain.

1775, February 15, emerfion of  $\mu$ 's first fatellite.

At 6h 12' 29" by the clock, felf.

6 12 17 by ditto, my fon, good.

|  | Apparent times. |
|--|-----------------|
|  | h ' "           |
| At Greenwich, reflector, air clear, but twilight, reflector, | 5 53 2          |
| At Paris, M. MESSIER, achrom. as before, excellent, —        | 6 2 33          |
| At Louvain, — — — —  | 6 12 22         |

On a mean, Louvain East of Paris 9' 46 $\frac{1}{2}$ ".February 19, emerfion of  $\mu$ 's fecond fatellite.

At 8h 36' 46" by the clock, felf, good.

8 36 20 ditto, by my fon.

|  |         |
|--|---------|
| At Greenwich, achrom. 3 $\frac{1}{2}$ feet, very fine, — | 8 17 18 |
| At Tyrnaw, — — — —                                       | 9 27 37 |
| At Louvain, — — — —                                      | 8 36 30 |

On a mean, Louvain East of Paris 9' 52".

February 22, emerfion of  $\mu$ 's first fatellite.

At 8h 8' 33" by the clock, good.

8 8 26 ditto, by my fon.

|  |         |
|--|---------|
| At Lunden, — — — —                               | 8 42 39 |
| At Tyrnaw, — — — —                               | 9 0 6   |
| As Stockholm, — — — —                            | 9 1 55  |
| At Oxford, Mr. HORNSBY, achrom. emerged quick, — | 7 44 32 |
| At Greenwich, fix feet reflector, — — —          | 7 49 37 |
| At Louvain, — — — —                              | 8 8 43  |

On a mean, Louvain East of Paris 9' 39"

## R E S U L T.

|                   |         |                         |         |
|-------------------|---------|-------------------------|---------|
|                   | ' "     |                         | ' "     |
|                   | { 9 7   | By the emerfions,       | { 9 46½ |
|                   | { 9 4½  |                         | { 9 52  |
|                   | { 9 25½ |                         | { 9 39  |
|                   | { 8 51  |                         |         |
|                   | { 9 31  | The mean, —             | 9 46—   |
|                   | { 8 42  | By the immerfions,      | 9 13½   |
|                   | { 9 29  |                         |         |
| By the immerfions | { 9 1½  | By a mean of immerfions | { 9 30  |
|                   | { 9 2   | and emerfions,          |         |
|                   | { 9 39½ |                         |         |
|                   | { 9 26½ |                         |         |
|                   | { 9 36  |                         |         |
|                   | { 9 13  |                         |         |
|                   | { 9 1   |                         |         |
|                   | { 9 13  |                         |         |
| The mean —        | 9 13½   |                         |         |

If the obfervations made at Louvain, excepting that of the fecond fatellite of Auguft 31, 1773, in which I fufpect an error of a minute, be compared to thofe made at Greenwich alone, with which there is a fingular agreement, they ftand as follows :

|               |        |                         |        |
|---------------|--------|-------------------------|--------|
|               | ' "    |                         | ' "    |
|               | { 9 52 | Emerfions, —            | { 9 44 |
|               | { 9 46 |                         | { 9 56 |
|               | { 9 57 |                         | { 9 30 |
| Immerfions, — | { 9 55 |                         |        |
|               | { 9 34 | By a mean of emerfions, | 9 43   |
|               | { 9 33 | By ditto of immerfions, | 9 42½  |
|               | { 9 20 |                         |        |
| Mean —        | 9 42½  |                         |        |

# 654 Mr. PIGOTT's *Astronomical Observations*

If a mean be taken between  $9^{\circ} 30''$ , the result of the whole of the compared observations as above, and  $9^{\circ} 43''$  the mean of the Louvain observations, compared with those made at Greenwich only, the mean of these means will probably be very near the truth, and give the *Refuge de Vrowperg, Rue des Dominiquaines*, at Louvain,  $9^{\circ} 37''$ —in time, or  $2^{\circ} 24' 15''$  of a great circle, East of the Royal Observatory at Paris.

## Farther observations of Louvain.

1773, August 15.

|  |   |   |   |       |
|--|---|---|---|-------|
| At 3 h. P.M. in a SSE. room, out of the Sun, FAHRENHEIT's thermometer stood at | — | — | — | } 87° |
| At 4 h. P.M. in a North-east room,   | — | — | — |       |
| At 4 h. 30' in a garden screened from the Sun,                                 | — | — | — | 73    |

1774, October 5.

|  |   |        |                 |
|--|---|--------|-----------------|
|  |   |        | Apparent times. |
|  |   |        | h ' "           |
| Immerfion of $\mu$ 's third fatellite, with a reflector 18 focal length, | } | 9 57 8 |                 |
| by SHORT, magnifying 130 times, by my fon,                               |   |        |                 |

1775, February 18.

## Occultation of Saturn by the Moon.

|  |       |         |
|--|-------|---------|
| Contact of Saturn's West and $\nu$ 's East limb, | —     | 9 25 15 |
| Total immerfion of Saturn's body,                | —     | 9 25 39 |
| Total immerfion of the ring,                     | — — — | 9 26 5  |

By

By my son, with the same reflector as above, magnifying 95 times on Saturn's emerging from a cloud, he appeared in contact with the limb of the Moon at 9h 25' 15". The suddenness of this observation may possibly make it uncertain for a few seconds. At the total immersion of Saturn's body, the Eastern part of the ring became very faint by the brightness of the Moon. Vapours affected pretty strongly both Saturn and the Moon. Clouds hindered from seeing the emersion.

March 1.

|  |   | Apparent times. |
|--|---|-----------------|
|  |   | h ' "           |
| Emersion of $\mathcal{A}$ 's first satellite, very slow, self, | — | 10 5 59         |
| I have no corresponding observation.                           |   |                 |

For the Longitude of Bruffels.

1773, Nov. 1, emerfion of  $\mu$ 's first fatellite.

At 11h 23' 23'' by the clock, felf, good.

11 23 32 ditto, by my fon, good.

|   |   |   | Apparent times. |    |    |
|---|---|---|-----------------|----|----|
|   |   |   | h               | '  | '' |
| At Greenwich, fix feet reflector,                       | — | — | 12              | 2  | 10 |
| At Paris, M. MESSIER, $3\frac{1}{2}$ feet achrom. good, | — | — | 11              | 11 | 49 |
| At Perinaldo, M. MARALDI, achrom. three feet fine,      | — | — | 11              | 33 | 24 |
| At Mufwel-hill, Mr. DALBY,                              | — | — | 11              | 1  | 16 |
| At Bruffels, by my obfervation,                         | — | — | 11              | 19 | 34 |

On a mean, Bruffels Eaft of Paris 7' 57''.

Nov. 10, emerfion of  $\mu$ 's first fatellite.

At 7h 51' 20'' by the clock, felf.

7 51 15 ditto, my fon, good.

|   |   |    |    |
|---|---|----|----|
| At Greenwich, by tables corrected, Phil. Tranf. 1777, p. 183. | 7 | 26 | 12 |
| At Bruffels,  | — | —  | —  |
|   | 7 | 43 | 35 |

On a mean, Bruffels Eaft of Paris 8' 7''.

December 10, emerfion of  $\mu$ 's first fatellite.

At 10h 14' 14'' by the clock, my fon.

|                                   |   |   |   |    |    |
|-----------------------------------|---|---|---|----|----|
| At Greenwich, fix feet reflector, | — | — | 9 | 27 | 59 |
| At Mufwel-hill, Mr. DALBY,        | — | — | 9 | 27 | 32 |
| At Bruffels,                      | — | — | 9 | 45 | 34 |

On a mean, Bruffels Eaft of Paris 8' 7'' $\frac{1}{2}$ .

## For the Longitude at Bruffels.

1775, December 19, emerfion of  $\mu$ 's first fatellite.

At 6h 42' 48'', by the clock, my fon.

|                      |   |   |   | Apparent times.                         |
|----------------------|---|---|---|---|
|                      |   |   |   | <sup>h</sup> <sup>'</sup> <sup>''</sup> |
| At Tyrnaw, P. WEISS, | — | — | — | 6 59 15                                 |
| At Bruffels,         | — | — | — | 6 6 26                                  |

On a mean, Bruffels East of Paris 8' 6''.

1774, January 11, emerfion of  $\mu$ 's first fatellite.

At 7h 8' 7'' by the clock, my fon.

|   |   |   |   |         |
|---|---|---|---|---------|
| At Paris, M. MESSIER, $3\frac{1}{2}$ feet achrom. good, | — |   |   | 6 4 24  |
| At Stockholm, M. WARGENTIN, good,                       | — | — | — | 7 7 2   |
| At Bruffels,  | — | — | — | 6 11 57 |

On a mean, Bruffels East of Paris 7' 39''.

February 3, emerfion of  $\mu$ 's first fatellite.

At 7h 34' 10'' by the clock, my fon.

|  |   |   |   |   |         |
|--|---|---|---|---|---------|
| At Paris, M. MESSIER, achrom. $3\frac{1}{2}$ feet, good, | — |   |   |   | 6 15 33 |
| At Stockholm,  | — | — | — | — | 7 18 10 |
| At Upfal,  | — | — | — | — | 7 16 17 |
| At Bruffels,   | — | — | — | — | 6 23 40 |

On a mean, Bruffels East of Paris 8' 20''.

## For the Longitude of Bruffels.

1774, February 18, emerfion of  $\mu$ 's fecond fatellite.

At 7h 24' 58'' by the clock, my fon.

|                             |   |   |   | Apparent times. |   |    |
|-----------------------------|---|---|---|-----------------|---|----|
|                             |   |   |   | h               | ' | '' |
| At Tyrnaw, F. WEISS,        | — | — | — | 7               | 1 | 25 |
| At Stockholm; M. WARGENTIN, | — | — | — | 7               | 3 | 36 |
| At Bruffels,                | — | — | — | 6               | 8 | 44 |

On a mean, Bruffels Eaft of Paris 8' 6''.

## R E S U L T.

The mean of thefe emerfions give Bruffels Eaft of Paris 8' in time; but if the obfervation of January 11, 1774, be rejected, as it ought, becaufe differing confiderably from the reft, the mean of the others will give the Court at Bruffels 8' 7'' in time, or  $2^{\circ} 1' 45''$  in parts of a great circle, Eaft of the Royal Obfervatory at Paris.

Farther

## Farther observations at Bruffels.

1773, October 27.

|   |   |   |   |      |
|---|---|---|---|------|
| At 3½ h. P.M. height of quicksilver in FAHRENHEIT's thermometer |   |   |   | } 70 |
| in a SW. room, out of the Sun,                                  | — | — | — |      |
| At 7 h. P.M. in a NE. room,                                     | — | — | — | 65½  |
| At 9½ h. P.M. in the same room,                                 | — | — | — | 65½  |
| At 11 h. P.M. in the same room,                                 | — | — | — | 65   |

A little wind from the west; cloudy; I was obliged to open the windows till 9 h. P.M.

November 1.

## Occultation of Aldebaran by the Moon, self.

|  | Apparent times. |   |          |
|--|-----------------|---|----------|
|  | h               | ' | "        |
| The star seemed to touch the Moon's limb,            | —               | — | 9 33 3   |
| The star, which seemed on the Moon's disk, vanished, | —               | — | 9 33 11  |
| Occultation, by my son,                              | —               | — | 9 33 12½ |

Aldebaran entered  $\frac{1}{6}$ th nearly of the Moon's diameter, South of the spot Grimaldus. The night was very fine at the occultation, but clouds hindered seeing the emergence.

November 12.

The quicksilver in the barometer, in a room one story high, at 7 h. P.M. stood at 28,645 English inches; the preceding night was very stormy.



1774, February 18.

Apparent times.  
h ' "

Immersion of a telescopic star into the dark part of the Moon; }  
instantaneous, by my son, — — — } 9 17 21

This star is set down in FLAMSTEAD *Atlas Cœlestis* as follows:

61° 57' R. A.

15 20 Declination North.

April 14.

Emerision of Aldebaran out of the enlightened part of the Moon, }  
opposite Mare Crisium; instantaneous; weather very fine; self, } 7 39 8

